***Amendments to the Claims***

This listing of claims will replace all prior versions, and listings, of claims in the above-captioned application.

**Listing of Claims:**

1. (currently amended) A centrifugal compressor unit ~~of the type~~ comprising:

a motor means ~~(50)~~ rotationally driving a rotor~~;~~ ~~(52)~~ and

at least one compressor comprising:

a stator body; and

a set of impeller wheels ~~(56)~~ which are mounted on a driven shaft rotationally driven by the rotor in the stator body~~;~~, ~~the entity consisting of~~

wherein the motor and ~~the or~~ each compressor is ~~being~~ mounted in a common housing ~~(86)~~ sealed against the gas handled by the compressor unit;~~,~~

~~the compressor unit further comprising~~ a set of active bearings ~~(60, 62, 64, 66, 67)~~ for axially and radially guiding the rotor on the driven shaft; and

cooling means for cooling the motor means and the guide bearings by tapping off some of the gas handled by the compressor at an~~the~~ outlet from a first compression stage ~~(56)~~, passing ~~said~~ the gas through the motor means ~~(50)~~ and through the bearings and

reinjecting the gas into ~~the~~ an inlet side of ~~the~~ a compressor, ~~characterized in that~~ wherein the cooling means comprises a set of internal passages ~~(88, 92, 94, 104)~~ for feeding the motor means and the bearings with cooling gas which are formed in the compressor unit, and wherein the flow of cooling gas in the motor means ~~(50) being~~is separate from the flow of cooling gas in the bearings ~~(60, 62, 64, 66)~~, and wherein the flow of cooling gas ~~and~~ convergesing upstream of the first compression stage.

2. (currently amended) The centrifugal compressor unit ~~as claimed in~~of claim 1, ~~characterized in that~~ wherein the cooling means further comprises a set of external lines ~~(80-1, 80-2, 80-3, 80-4, 80-5, 80-6)~~ collecting the gas on the outlet side of the first compression stage and feeding the internal passages in parallel.

3. (currently amended) The centrifugal compressor unit ~~as claimed in~~of claim 2, ~~characterized in that~~wherein the internal passages ~~(80-1, 80-2)~~ for feeding the motor means are fed in parallel with the internal passages ~~(80-3, 80-4, 80-5, 80-6)~~ for feeding the bearings with cooling gas.

4. (currently amended) The centrifugal compressor unit ~~as claimed in any one~~ of claims 1 ~~to~~ ~~3~~, ~~characterized in that~~ wherein the cooling means are equipped with filtering means ~~(82)~~ for filtering the gas handled by the compressor.

5. (currently amended) The centrifugal compressor unit ~~as claimed in any one~~ of claims 1 ~~to~~ 4, ~~characterized in that~~wherein, with the driven shaft of the compressor supported by two end radial bearings ~~(64, 66)~~, the cooling means comprise an axial passage ~~(104)~~ running from one bearing to the other and fed at one of its ends by the external lines, and wherein the ~~said~~ axial passage globally running longitudinally and radially externally through the compressor.

6. (currently amended) The centrifugal compressor unit ~~as claimed in any one~~ of claims 1 ~~to~~ ~~5~~, ~~characterized in that~~ wherein the internal passages for feeding the bearings comprise a set of directional passages ~~(94)~~ directed radially externally in the compressor, and wherein each internal passage feeds ~~feeding~~ one bearing.

7. (currently amended) The centrifugal compressor unit ~~as claimed in any one~~ of claims 1 ~~to~~ ~~6~~, ~~characterized in that~~ wherein the motor is fed with cooling gas via an orifice ~~(92)~~ formed in an end cover ~~(90)~~ and in communication with an external line.

8. (currently amended) The centrifugal compressor unit ~~as claimed in claim 7 dependent on claim 6,~~ of claim 1, wherein the internal passages for feeding the bearings comprise a set of directional passages directed radially externally in the compressor, and wherein each internal passage feeds one bearing, and wherein the motor is fed with cooling gas via an orifice formed in an end cover and in communication with an external line, and wherein ~~characterized in that~~ the flow of cooling gas is mixed with the flow of cooling gas leaving the bearings cooled by the gas coming from the internal passages.

9. (currently amended) The centrifugal compressor unit ~~as claimed in any one~~ of claims 1 ~~to~~ ~~8~~, ~~characterized in that it~~ further comprising ~~comprises~~ means ~~(105)~~ for regulating ~~the~~ a refrigeration flow rate for the motor ~~on the one hand~~ and for each bearing ~~on the other~~.

10. (currently amended) The centrifugal compressor unit ~~as claimed in any one~~ of claims 1 ~~to~~ ~~9~~, ~~characterized in that it~~ further comprising ~~comprises~~ means ~~(108)~~ for collecting flows of cooling gas from members situated on ~~the~~ a same side as an equalizing piston ~~(107)~~.

11. (new) The centrifugal compressor unit of claim 2, wherein the cooling means are equipped with filtering means for filtering the gas handled by the compressor.

12. (new) The centrifugal compressor unit of claim 11, wherein, with the driven shaft of the compressor supported by two end radial bearings, the cooling means comprise an axial passage running from one bearing to the other and fed at one of its ends by the external lines, and wherein the axial passage globally running longitudinally and radially externally through the compressor.

13. (new) The centrifugal compressor unit of claim 12, wherein the internal passages for feeding the bearings comprise a set of directional passages directed radially externally in the compressor, and wherein each internal passage feeds one bearing.

14. (new) The centrifugal compressor unit of claim 13, wherein the motor is fed with cooling gas via an orifice formed in an end cover and in communication with an external line.

15. (new) The centrifugal compressor unit of claim 14, wherein the flow of cooling gas is mixed with the flow of cooling gas leaving the bearings cooled by the gas coming from the internal passages.

16. (new) The centrifugal compressor unit of claim 17, further comprising means for regulating a refrigeration flow rate for the motor and for each bearing.

17. (new) The centrifugal compressor unit of claim 18, further comprising means for collecting flows of cooling gas from members situated on a same side as an equalizing piston.